Remarks / Arguments

With the addition of new claims 19 and 20, claims 1-20 are pending in the present application. Claims 1, 6, 8, 12, 15 and 18 have been amended to better define the claimed invention. No new matter is introduced herein.

The Examiner has objected to the drawings under 37 CFR 1.83(a) as failing to show nonlinear-phase-shift compensation (NPSC) as recited in claims 3 and 17. Applicants submit herewith a replacement sheet drawing with a proposed new FIG. 1 showing an NPSC block 160. Applicants have also amended the Specification to provide a description of the new block 160. These proposed amendments to the Drawings and the Specification are fully supported by the originally-filed Application, including any other patent applications or patents incorporated therein by reference, and thus do not introduce new matter.

Claims 1, 3, 8, 15 and 17 stand rejected under 35 USC 112, first paragraph, as failing to comply with the enablement requirement because they contain "subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention." More specifically, claims 3 and 17 recite "nonlinear-phase-shift compensation," and the Examiner contends that there is no structure or circuit diagram provided to teach one of ordinary skill how such compensation is provided or connected in the system.

Applicants respectfully disagree. The present Application incorporates by reference U.S. Patent Application No. 10/331,217, which has been published under the number 2004/0125435 to Liu et al. (hereinafter "Liu"). Liu clearly shows, in FIG. 1, how an NPSC device (60) can be provided or connected in an optical communication system.

With respect to claims 1, 8 and 15, which recite "synchronous data signals," the Examiner contends that there is no structure or circuit diagram to teach a person of ordinary skill in the art how the data signals are synchronized and that no connection is shown between the DPSK and ASK data signals.

Applicants respectfully assert that the provision of synchronous data signals is well-known to a person of ordinary skill in the art. Moreover, as is well-known, other than synchronizing two data signals, the data signals can be generated so that they are

synchronous to begin with, e.g., such as by generating the signals in accordance with the same clocking signal. Considering the variety of well-known techniques of providing synchronous data signals, Applicants did not deem it necessary to clutter the present Application with such basic, implementational details.

In light of the foregoing considerations, Applicants respectfully assert that the rejection of claims 1, 3, 8, 15 and 17 is not warranted and should be withdrawn.

Claims 1, 2, 8, 9, 13, 15 and 16 stand provisionally rejected for non-statutory, obviousness-type double patenting in view of claims 1, 2, 5 and 7 of co-pending U.S. Patent Application No. 10/673,701 ("app701"). To address this issue, Applicants submit herewith a Terminal Disclaimer executed by the undersigned attorney of record. In view of the Terminal Disclaimer, this rejection has been overcome and should be withdrawn.

Claims 1, 2, 4-6, 8-13, 15 and 16 have been rejected under 35 USC 103(a) as being unpatentable over U.S. Published Patent Application No. 2003/0198478 to Vrazel et al. (hereinafter "Vrazel"). For the reasons set forth below, Applicants respectfully disagree.

The Examiner contends that Vrazel discloses driving at least two modulators with at least two data signals to generate an optical signal using differential phase shift keying (DPSK) and amplitude shift keying (ASK), but concedes that Vrazel does not disclose that the data signals are synchronized and have the same data rate. The Examiner contends, without support, that it would have been obvious to an artisan of ordinary skill in the art to provide data signals that are synchronous and have the same data rate.

Applicants respectfully disagree. As Vrazel demonstrates, it is possible to implement a DPSK/ASK modulation scheme without teaching whether the data signals are synchronized or have the same data rate. While contending that it would be obvious to do so, the Examiner does not point to any reason or motivation to incur any additional constraint or complexity entailed in providing synchronous data signals having the same data rate.

Moreover, the parameter extinction ratio (ER) as it relates to the DP-ASK modulated optical signal is meaningless unless the data signals are synchronous. Unless the data signals are synchronous, there will be no fixed high and low signal levels from which the ER of the odulated optical signal could be determined; i.e., the DP-ASK modulated optical signal would not have a prescribed ER, as recited in independent claims 1, 8, 15 and 18.

The Examiner also concedes that Vrazel does not disclose modulation with an extinction ratio of between about 5 dB and about 10 dB, as recited in dependent claims 6, 12, 19 and 20. The Examiner contends, again without support, that it would have been obvious to an artisan of ordinary skill in the art to provide such an extinction ratio.

Applicants respectfully disagree with this contention as well. While it is well known that a high extinction ratio (ER) is good for ASK modulation, Applicants have discovered that if it is too high (i.e., above 10 dB), the PSK modulation will suffer. Vrazel sheds no light on such considerations, let alone a specific ER range as recited in the claims.

For the foregoing reasons, Applicants respectfully assert that claims 1, 2, 4-6, 8-13, 15 and 16, as amended, are not rendered obvious by Vrazel and that the rejection of these claims should be withdrawn.

The Examiner has rejected claims 3, 7, 14 and 17 under 35 USC 103(a) as being unpatentable over Vrazel in view of U.S. Published Patent Application No. 2004/0125435 to Liu et al. (hereinafter "Liu"). Applicants respectfully disagree.

While the Examiner asserts that Liu teaches the use of nonlinear-phase-shift compensation and the generation of RZ optical signals, there is no assertion that Liu teaches the deficiencies of Vrazel discussed above in connection with independent claims 1, 8 and 15. Thus, even assuming arguendo that Vrazel and Liu can properly be combined, their combined teachings would not render obvious dependent claims 3, 7, 14 and 17. Withdrawal of the 35 USC 103(a) rejection of these claims is therefore in order.

Finally, claim 18 has been rejected under 35 USC 103(a) as being unpatentable over U.S. Patent No. 6,626,589 to Epworth (hereinafter "Epworth") in view of U.S. Published Patent Application No. 2004/0021829 to Griffin (hereinafter "Griffin"). Applicants respectfully disagree for the following reasons.

As the Examiner will note, claim 18 has been amended above to recite: "an optical 4-ary DP-ASK transmitter including at least two modulators adapted to provide an optical 4-ary DP-ASK modulated signal, the at least two modulators driven by synchronous data signals having the same data rate and the optical 4-ary DP-ASK modulated signal having a prescribed extinction ratio..." There is no contention that Epworth and Griffin, even if properly combinable, teach these aspects of the invention as recited in claim 18. As such, the

Examiner has not established that claim 18, as amended, is unpatentable over Epworth in view of Griffin. Withdrawal of this rejection is therefore warranted.

Applicants respectfully submit that all pending claims in their present form are allowable. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If however, there remain any unresolved issues requiring adverse action in any of the claims now pending in this application, the Examiner is urged to contact the undersigned so that any such issues can be resolved as expeditiously as possible.

Respectfully submitted,

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